







## Mid-air failures reduced by AFRL technology

## by Francis L. Crumb, Information Directorate

*ROME*, *N.Y.* — Chafing in electrical and hydraulic conduits, which could lead to disastrous mid-air failures, may be detected in advance with technology identified by three members of Air Force Research Laboratory's Information Directorate.

Frank Born, Roy Stratton and Capt. Raymond Harris of the directorate's Information Technology Branch have submitted an application to the U.S. Patent and Trademark Office for a patent on the technology.

"It's really rather old technology that evolved from some research we were conducting when our mission included electronics reliability," Stratton said. "Basically, the technique involves wrapping a fiber optic cable or piece of wire around the conduit you want to monitor. When a sensor breaks or short-circuits, you know you have dangerous chafing.

"This procedure can be used on anything where chafing is a concern," Stratton said. "We were thinking specifically about the 1996 crash of TWA Flight 800, where investigators have speculated that an electrical short in the center fuel tank caused a spark and subsequent explosion. Our technique will determine that something has chafed before you reach the point of catastrophic failure."

The technology is expected to be of prime interest to aircraft manufacturers concerned with chafing problems involving electrical systems in several models. However, the technology can also be applied to hydraulic or fuel lines where rupture or bursting can cause system failures and damage to surrounding materials.

"The use of these ideas could potentially prevent deadly mishaps and reduce the cost of examining cables for chafing to prevent such accidents," Stratton said. "In addition to cables, this method will detect chafing on any conduit-hydraulic hose, air-line, pipe or fiber optical bundle." @